

**22M:096:001**  
**Collisions Module–Homework 1**

For this assignment we are interested in the interactions between a rigid spherical body with a fixed, rigid, planar obstacle. Suppose that the sphere is initially located above the obstacle and is pulled towards the obstacle by the force of gravity.

1. Use the *position-based* complementarity model to simulate a ball dropped from the specified height colliding with a fixed, rigid, planar obstacle. Try changing the mass, initial height, and initial velocity of the ball, as well as the size of the time-step. What do you observe?
2. Use the *velocity-based* complementarity model with the same inputs as above to simulate the ball colliding with the obstacle.
3. Compare the two models. (Is one more realistic than the other? Simpler? Faster? Intuitive? Are either of them any good? What's missing from the models?)